

WHERE PIPE IS LAID IN ROADWAY RIGHT OF WAY, THE LAST FOOT OF BACKFILL SHALL BE COMPACTED TO 100% DENSITY.

95% DENSITY (ROADWAY RIGHT OF WAY)  
85% DENSITY OFFSITE CONDITION

LIFTS SHALL BE AS REQUIRED TO PROTECT PIPE AND ACHIEVE PROPER COMPACTION PER LOCATION.

MINIMUM OF 4" LOOSE NATIVE MATERIAL

HAND PLACED BACKFILL IN LAYERS AND TAMPED TO TOP OF PIPE

EXCAVATE UNSUITABLE MATERIAL A MINIMUM OF 6" BELOW PIPE BOTTOM AND REPLACE WITH SELECT REFILL (DIP ONLY), NATIVE MATERIAL, OR BORROW MATERIAL.

UNSUITABLE MATERIAL

WATER LINE

NOTE:  
1. ALL PVC PIPE INSTALLATIONS REQUIRE 12 GAUGE LOCATING WIRE AND IDENTIFICATION TAPE FOR UNDERGROUND UTILITY LINE. ALL BEGINNING AND ENDING OF WATER LINES THAT ARE DIP (FOR A PORTION) IN A CASING OR NOT SHALL HAVE CONTINUOUS LOCATING WIRE FROM VALVE TO VALVE OR VALVE TO HYDRANT.  
2. ALL COMPACTION DENSITIES SHALL BE IN ACCORDANCE WITH ASTM D998, STANDARD PROCTOR.

**TYPE 3 TRENCH**

**TYPICAL WATER LINE TRENCH EXCAVATION DETAIL**

NO SCALE

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_  
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WATER UTILITY  
COLUMBIA COUNTY  
ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER  
**14.4.9-1**

PIPE DIAMETER INCHES	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	9631	5119	2773	1492	710
6	7460	10550	5710	2910	1463
8	12860	18187	9843	5016	2522
10	19340	27351	14832	7544	3792
12	27360	38655	20940	10673	5365
14	36760	51987	28135	14339	7208
16	47840	67232	36386	18545	9322
18	59720	84457	45708	23296	11710
20	73280	103634	56086	28585	14359
24	104540	147843	80012	40779	20499
30	160840	227463	123102	62741	31538
36	230400	320830	176341	88976	45128

GAUGE PRESSURE = 200 P.S.I.

NOTES:  
1. SUFFICIENT CONCRETE THRUST BLOCKING OR RESTRAINED JOINT PIPE SHALL BE INSTALLED TO ADEQUATELY SUSTAIN THE THRUST REACTIONS NOTED ABOVE FOR PIPE LINES TESTED TO 200 P.S.I. GAUGE PRESSURE. (SEE DETAIL 14.3.2.4-1 FOR RESTRAINED JOINT PIPE.) ALL BLOCKING SHALL BEAR AGAINST UNDISTURBED EARTH.  
2. THE SOIL BEARING PRESSURE MAY BE ASSUMED AS 3000#/SF. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING SOIL BEARING PRESSURE FOR ALL INSTALLATIONS.

$A = hb = \frac{S_f T}{S_b}$

A = Area of Base  
S<sub>f</sub> = Safety Factor (1.5)  
T = Thrust to be Restrained  
S<sub>b</sub> = Soil Bearing Pressure  
h = Height  
b = Width of Base

**DESIGN LOADS FOR THRUST OR REACTION BLOCKING DETAIL**

NO SCALE

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WATER UTILITY  
COLUMBIA COUNTY  
ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER  
**14.7-1**

2" ABOVE FINISH GRADE WITH CONCRETE

VALVE BOX SHALL BE FLUSH WITH FINISH ASPHALT OR CONCRETE SIDEWALK

RING IN GRASSED OR LANDSCAPED AREA

CONCRETE RING

WHERE REQUIRED, THE LOCATING WIRE SHALL BE MADE CONTINUOUS THROUGH THE VALVE BOX AS SHOWN

VALVE BOX SHALL BE CLEAN AND FREE FROM ALL DEBRIS

VALVE BOX AND EXTENSIONS AS REQUIRED. A PIECE OF PIPE IS NOT PERMITTED TO SERVE AS A VALVE BOX

LOCATING WIRE MUST BE OUTSIDE OF VALVE BOX

LOCATING WIRE STRAPPED TO THE PIPE AND IDENTIFICATION TAPE (FOR PVC PIPE INSTALLATION ONLY)

WATER LINE OR FORCE MAIN

GATE VALVE (WATER)  
PLUG VALVE (SEWER)

VALVES REQUIRING RESTRAINT SHALL UTILIZE MEGA-LUGS AND RESTRAINED JOINT PIPE OR THRUST COLLARS AS REQUIRED

**TYPICAL VALVE AND VALVE BOX DETAIL**

NO SCALE

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WATER UTILITY  
COLUMBIA COUNTY  
ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER  
**14.9-1**

PUBLIC RIGHT OF WAY (WIDTH VARIES)

ARTERIAL/COLLECTOR ROADS OR RURAL SERVICE STREETS

METER BOX SET FLUSH WITH FINISH GRADE

90° BEND BRASS (CTS X MIP) AND CURB STOP (FIP X FIP) 12" BELOW TOP OF METER BOX

1'-0" SEE NOTE 6

SEE VALVE BOX DETAIL LOCATING WIRE NOT REQUIRED

2" BRASS CLOSE NIPPLE

EXISTING OR NEW WATER LINE

SERVICE SADDLE, SEE NOTE 1

SMOOTH RADIUS, (OPTIONAL 90° BRASS BEND CTS X CTS)

BRASS ADAPTER, CTS X MIP SEE NOTE 7

2" GATE VALVE

NOTES:  
1. ALL SERVICE SADDLES SHALL BE INSTALLED HORIZONTALLY FOR ALL 2" AND LARGER SERVICES.  
2. THE SHORT SIDE SERVICE IS SHOWN IN THIS DETAIL. A LONG SIDE SERVICE IS SIMILAR AND SHALL BE THE MIRROR OPPOSITE.  
3. METER BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVED AREAS.  
4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE UNLESS OTHERWISE APPROVED.  
5. SEE STANDARD DETAILS 11.5-1, 11.5-2, AND 11.5-3 FOR WATER LINE LOCATION DETAIL.  
6. WHERE SPECIFICALLY APPROVED, THE METER INSTALLATION MAY BE INSTALLED WITHIN AN EASEMENT DEDICATED TO COLUMBIA COUNTY WHERE NECESSARY.  
7. ALL 1 1/2" AND 2" SERVICES SHALL BE INSTALLED AS A 2" TAP. A 1 1/2" SERVICE SHALL UTILIZE AS A 2" X 1 1/2" MIP X FIP BUSHING TO REDUCE TO SERVICE LINE PIPE SIZE.

**TYPICAL 1 1/2" & 2" SERVICE LINE & METER BOX DETAIL - 2**

NO SCALE

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Revision No. \_\_\_\_\_ Date: \_\_\_\_\_

WATER UTILITY  
COLUMBIA COUNTY  
ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER  
**14.10-2A**

HYDRANT PUMPER NOZZLE SHALL FACE TRAVEL WAY

LOCATING WIRE SEE NOTE 1

FINISH GRADE

VALVE AND VALVE BOX: SEE STANDARD DETAIL LOCATING WIRE NOT REQUIRED AROUND VALVE BOX AT HYDRANT

6" VALVE

CONTINUOUS LOCATING WIRE, SEE NOTE 1

HYDRANT TEE ONLY

6" ANCHOR COUPLING 12" LONG MIN.

RESTRAINED JOINT DIP AND FITTINGS

WATER LINE SEE PLANS FOR SIZE

PLACE MINIMUM OF 7 CUBIC FEET HYDRANT LEAD OF CRUSHED STONE BENEATH HYDRANT FOOT

**TYPICAL HYDRANT ASSEMBLY DETAIL (MINIMAL LEAD LENGTH)**

NO SCALE

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WATER UTILITY  
COLUMBIA COUNTY  
ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER  
**14.15-1A**

TRENCH WIDTH

4 #4 EW MINIMUM

UNDISTURBED EARTH

REACTION BEARING SURFACE

OPTION #2 1/2" PLATE OR STANDARD MECHANICAL JOINT GLAND WITH RODS

OPTION #1 ANCHOR ON PIPE SEE NOTE 5

PLAN

THRUST COLLAR MINIMUM DIMENSION TABLE

PIPE SIZE	A	B	D	H	W	T
4"	1'-6"	2'	4'	3'	4'	2'
6"	1'-6"	2'	4'	3'	4'	2'
8"	1'-6"	2'	4'	3'-6"	4'	2'
10"	2'-3"	2'	4'	4'-6"	4'	2'
12"	2'-3"	2'-6"	4'	4'-6"	5'	2'

\* WATER SERVICE LINE ONLY, OR FORCE MAIN.

NOTES:  
1. THRUST COLLAR DIMENSIONS ARE BASED UPON MAXIMUM TRENCH WIDTHS. EXCESSIVE EXCAVATION OR GRADING AT OR NEAR COLLAR MAY REQUIRE A LARGER COLLAR OR AN ADDITIONAL COLLAR TO DEVELOP PROPER SOIL BEARING CAPACITY.  
2. SOIL BEARING CAPACITY IS ASSUMED AS 3000#/SF. THE CONTRACTOR IS RESPONSIBLE IN DETERMINING IF THE SOIL BEARING CAPACITY IS ADEQUATE PER APPLICATION.  
3. ALL DIMENSIONS ARE MINIMUM REQUIREMENTS TO REACT TO A MINIMUM FORCE OF 200 psi. DIMENSIONS FOR THRUST COLLARS NECESSARY FOR PIPES LARGER THAN 12" SHALL BE DESIGNED BY PROFESSIONAL ENGINEER OF RECORD PER APPLICATION.  
4. ALL REINFORCING STEEL SHALL BE A MINIMUM OF GRADE 60 #4 BARS. ALL CONCRETE SHALL BE A MINIMUM OF 4000 psi.  
5. OPTION #1 UTILIZES 2-EBBA IRON MID-SPAN ANCHORS FASTENED ON PIPE AND ENCASED IN CONCRETE COLLAR. WHERE THE MID-SPAN IS USED, A 4 MI. POLYETHYLENE WRAP SHALL BE USED TO COVER THE ANCHOR. ALL PIPE FROM THRUST COLLAR TO FITTING OR VALVE MUST BE RESTRAINED JOINT. MID-SPANS SHALL BE INSTALLED BACK TO BACK IN REVERSE OF EACH OTHER.  
OPTION #2 UTILIZES A 1/2" FLAT FLANGE PLATE DRILLED TO MATCH OR A MECHANICAL JOINT GLAND FLUSH AGAINST CONCRETE COLLAR. RODS SHALL BE USED AS REQUIRED TO RESTRAIN VALVE OR FITTING. SEE STANDARD DETAIL 14.7-3 FOR MORE DETAIL.

**THRUST COLLAR DETAIL**

NO SCALE

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WATER UTILITY  
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STANDARD DETAIL NUMBER  
**14.7-2R**

EXISTING WATER LINE (TO RETAIN) ---W---W---W---

EXISTING WATER LINE (TO BE ABANDONED) -X-W-X-W-X-W-X-W-X-

PROPOSED WATER LINE ---W---W---W---

EXISTING FIBER OPTIC LINE ---T---T---T---

EXISTING WATER METER

PROPOSED WATER METER

EXISTING WATER VALVE

PROPOSED WATER VALVE

EXISTING COLUMBIA COUNTY FIBER OPTIC HANDHOLE

EXISTING FIRE HYDRANT

PROPOSED FIRE HYDRANT

SCALE IN FEET

0 20 40 80

REVISION DATES

REVISED

PROPOSED PASSING LANE ON SR 47 SOUTHBOUND FROM CR 46 TO JUST NORTH OF KEG CREEK

COLUMBIA COUNTY WATER UTILITY

CCWU UTILITY RELOCATION PLANS

UTILITY DETAILS

STP00-0076-01(028)

COLUMBIA COUNTY

DRAWING NO.

44-009